REMARKS

Claims 1-18 are pending in the current application. In the above Amendment, Applicants' Representative has cancelled claim 18, added new claims 19-21, and amended claims 1, 9, 13, and 15 to more distinctly claim and particularly point out that which Applicants regard as their invention. In an Office Action dated January 28, 2005 ("Office Action"), the Examiner rejected claims 1, 2, 7, and 11 under 35 U.S.C. § 102(b) as being anticipated by MacDonald, U.S. Patent No. 5,212,471 ("MacDonald"), rejected claims 3, 4, and 8 under 35 U.S.C. § 103(a) as being unpatentable over MacDonald in view of Weber et al., U.S. Patent Publication No. 2004/0135742 A1 ("Weber"), rejected claims 5, 6, 10, and 12-14 under 35 U.S.C. § 103(a) as being unpatentable over MacDonald in view of Ferrante, U.S. Patent No. 5,576,886 ("Ferrante"), rejected claim 9 under 35 U.S.C. § 103(a) as being unpatentable over MacDonald in view of Knockeart et al., U.S. Patent Publication No. 2002/0069071 A1 ("Knockeart"), rejected claims 15-17 under 35 U.S.C. § 103(a) as being unpatentable over Ferrante in view of MacDonald, and rejected claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Ferrante in view of MacDonald and further in view of Knockeart. Applicants' representative respectfully traverses the 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a) rejections.

The present invention is directed to, among other things, providing an inexpensive, easily manufactured and installed, reliable, and acceptable, from the standpoint of regulatory agencies, heads-up display ("HUD") for private and commercial automobiles and trucks. Significant differences between the claimed, present invention and far more expensive and complex HUD devices developed for combat aircraft and other expensive vehicles are, at least in part, motivated by the need to meet highway safety regulations and to address a market in which vehicle prices are significantly less, in general, than the cost for the complex HUD devices incorporated into expensive, combat aircraft and commercial aircraft.

MacDonald does not anticipate claim 1. MacDonald discloses a HUD implementation in which "a half-wave retarder [15 which] is interposed between the

inside and outside air interfaces of the windshield in the region of the combiner element" (MacDonald, column 2, lines 12-14). In other words, MacDonald discloses a HUD that embeds a combiner within a windshield of a vehicle. By contrast, the combiner element claimed in independent claims 1, 13, and 15 is "positioned between the occupant and the windshield." This difference is significant. Embedding a combiner within a windshield involves an expensive redesign of automobile windshields, additional alignment requirements during car manufacturer, standards issues, and a host of other issues. By contrast, by either applying a film-based combiner to the inside of a windshield, or by otherwise attaching a combiner within an already manufactured automobile, Applicants' HUD can be more economically and easily manufactured and installed. Because of the different positioning of the combiner in MacDonald's HUD and the HUD of the present invention, optical characteristics of the combiner may be quite different. Display light transmitted by a display light source, in MacDonald's system, must first traverse a windshield optical boundary before reaching the combiner. The initial optical boundary serves as the reflective element in MacDonald's system. In Applicants' currently claimed HUD, by contrast, the display light first impinges on the combiner, which reflects the image into the field of view of a vehicle occupant. The combiner of the present invention may therefore provide for higher reflectivity of the display light, allowing for significantly lower intensity light sources. The currently claimed system may also more effectively extinguish potential ghost images. Furthermore, the presently claimed HUD combiner allows for a much wider range of materials and coatings to be used in the combiner, in contrast to a combiner embedded within a windshield during high-temperature and potentially chemically destructive manufacturing processes.

Weber, like MacDonald, discloses a HUD system in which a HUD element is embedded in the windshield, although, in the case of Weber, the embedded element is reflective polarizer (20 in Figure 2) embedded within a windshield (18 in Figure 2), rather than a combiner, in the case of MacDonald. However, while MacDonald discloses a system in which *s*-polarized display light is emitted to carry an image, Weber uses a *p*-polarized display light source. Materials used for *s*-polarized light combiners are different from those used for *p*-polarized light reflectors. MacDonald's

combiner is employed to change the polarization of *s*-polarized display light to *p*-polarized light (MacDonald, column 3, lines 11-16). By contrast, Weber's reflective polarizer is employed simply to reflect incident *p*-polarized display light while blocking *s*-polarized environmental light incoming from the field of view (Weber, paragraph 0033). Thus, while Weber and MacDonald are similar in using a windshield-embedded element, they embed very different elements in the windshield, and employ significantly different operating methods.

Ferrante discusses high-end, expensive combat-aircraft HUDs, in which a combiner (32 in Figure 1) is interposed between a windshield (22 in Figure 1) and a viewer (24 in Figure 1). However, Ferrante's system operates, and is designed to operate, on entirely different principles than those employed in the present invention, or in either MacDonald or Weber's disclosed systems. Ferrante's light source (100 in Figure 1) is a CRT, and the output of the light source is not polarized. Instead, the display source has a narrow spectral band (Ferrante, column 5, lines 35-37), and Ferrante's combiner is designed to reflect the narrow spectral band output of the display light source while transmitting light of other wavelengths. Ferrante therefore neither mentions nor suggests "a display light source that transmits an image in at least partially polarized light," as clearly claimed in all three independent claims of the current application.

Neither MacDonald nor Weber, alone or in combination, anticipates or makes obvious the present invention as claimed in independent claims 1, 13, and 15. Neither MacDonald nor Weber suggest or mention a combiner affixed to, or interposed in front of, a windshield. The optical properties and material composition of a combiner directly illuminated by a display light source may be quite different from those of a combiner or reflective polarizer embedded within a windshield. The optical properties and material composition of a reflective polarizer embedded within a windshield. are very different from a combiner directly illuminated by a display light source. Ferrante does disclose a combiner external to the windshield, but discloses a system that operates under significantly different principles than Weber, MacDonald, or the currently claimed HUD system. For this reason, Applicants' Representative can see no basis for a combination of Ferrante with either or both of Weber and MacDonald, nor any basis of a

combination of MacDonald and Weber. All cited references disclose HUD systems that are significantly different from one another in design, operation, and material composition, and all are quite different from the currently claimed invention. Moreover, there is no explicit suggestion for such a combination in any of the cited references.

Because the independent claims 1, 13, and 15 are neither anticipated by, nor made obvious by, any one or combination of MacDonald, Weber, and Ferrante, all dependent claims depending from them are therefore neither anticipated nor made obvious by MacDonald, Weber, Ferrante, or any combination thereof. In Applicant's representative's opinion, all the claims remaining in the current application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

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